



SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANT: HOFMANN, Joachim  
SCHMID, Karlheinrich  
PAULI, Annette

(ii) TITLE OF INVENTION: DICTYOCaulus VIVIPARUS ANTIGEN FOR THE  
DIAGNOSIS OF LUNGWORM INFESTATION AND FOR VACCINATION

(iii) NUMBER OF SEQUENCES: 30

(iv) CORRESPONDENCE ADDRESS:  
(A) ADDRESSEE: FOLEY & LARDNER  
(B) STREET: 3000 K Street, N.W.  
(C) CITY: Washington  
(D) STATE: D.C.  
(E) COUNTRY: U.S.A.  
(F) ZIP: 20007-5109

(v) COMPUTER READABLE FORM:  
(A) MEDIUM TYPE: Floppy disk  
(B) COMPUTER: IBM PC compatible  
(C) OPERATING SYSTEM: PC-DOS/MS-DOS  
(D) SOFTWARE: PatentIn Release #1.0, Version #1.30

(vi) CURRENT APPLICATION DATA:  
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(ix) ATTORNEY/AGENT INFORMATION:  
(A) NAME: Granados, Patricia D.  
(B) REGISTRATION NUMBER: 33,683  
(C) REFERENCE/DOCKET NUMBER: 038311/0103

(x) TELECOMMUNICATION INFORMATION:  
(A) TELEPHONE: (202) 672-5300  
(B) TELEFAX: (202) 672-5399

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS:  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Ser Glu Ser Leu Tyr Glu Lys  
1 5

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS:  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Met Met Asp Asn Phe Val Lys  
1 5

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 14 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS:  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Tyr Lys Asp Glu Asn Glu Phe Met Asp Ala Leu Lys Gln Lys  
1 5 10

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 20 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS:  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Tyr Asp Ile Pro Glu Gln Tyr Arg Glu Ile Ile Pro Gln Asn Val Ala  
1 5 10 15  
Glu His Leu Lys  
20

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 26 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Asp	Ala	Ile	Glu	Lys	Tyr	Glu	Asp	Ile	Pro	Glu	Gln	Tyr	Arg	Glu	Ile
1				5					10				15		
Ile	Pro	Gln	Asn	Val	Ala	Glu	His	Leu	Lys						
				20				25							

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Phe	His	Ala	Glu	Leu	Leu	Ala	Gly	Ile	Lys	Pro	Ser	Leu	Glu	Glu	Leu
1				5					10				15		
Lys	Lys														

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Gln	Phe	Pro	Ile	Leu	Thr	Ser	Val	Phe	Ser	Asn	Glu	Glu	Lys		
1				5					10						

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 base pairs

- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: exon
- (B) LOCATION: 1..21

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

TCNGARUCNY TNTAYGARAA R

21

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: exon
- (B) LOCATION: 1..21

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

ATGATGGAYA AYTTYGTNAA R

21

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 42 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: exon
- (B) LOCATION: 1..42

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

TAYAARGAYG ARAAYGARTT YATGGAYGCN YTNAARCARA AR

42

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 60 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: exon
- (B) LOCATION: 1..60

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

TAYGAYATHC CNGARCARTA YMGNGARATH ATHCCNCARA AYGTNGCNGA RCAYYTNAAR 60

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 78 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: exon
- (B) LOCATION: 1..78

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GAYGCNATHG ARAARTAYGA RGAYATHCCN GARCARTAYM GNGARATHAT HCCNCARAAY 60

GTNGCNGARC AYYTNAAR 78

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 54 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: exon
- (B) LOCATION: 1..54

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

TTYCAYGCNG ARYTNYTNGC NGGNATHAAR CCNTCNYTNG ARGARYTNAA RAAR 54

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 42 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:  
(A) NAME/KEY: exon  
(B) LOCATION: 1..42

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

CARTTYCCNA THYTNACNTC NGTNTTYTCN AAYGARGARA AR

42

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 29 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:  
(A) NAME/KEY: exon  
(B) LOCATION: 1..29

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

CCGGAATTCG AYGCNATNGA RAARTAYGA

29

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS:  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Asp Ala Ile Glu Lys Tyr Glu  
1 5

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 29 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:  
(A) NAME/KEY: exon  
(B) LOCATION: 1..29

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

CGCGGATCCG ARATNATNCC NCARAAYGT

29

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Glu Ile Ile Pro Gln Asn Val  
1 5

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 29 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: exon
- (B) LOCATION: 1..29

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

CCGGAATTCT AYAARGAYGA RAAYGARTT

29

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Tyr Lys Asp Glu Asn Glu Phe  
1 5

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 31 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

(A) NAME/KEY: exon  
(B) LOCATION: 1..31

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

AAAACTGCAG NGCRTCCATR AAYTCRTTYT C

31

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS:  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Ala Asp Met Phe Glu Asn Glu  
1 5

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 31 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

(A) NAME/KEY: exon  
(B) LOCATION: 1..31

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

AAAACTGCAG YTTYTCYTCR TTRCTRAANA C

31

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS:

(D) TOPOLOGY: linear  
(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Lys Glu Glu Asn Ser Phe Val  
1 5

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 32 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:  
(A) NAME/KEY: exon  
(B) LOCATION: 1..32

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

GACATGCATG TAGACGCACT TGGAGAAGAG GC

32

(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 8 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS:  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Val Asp Ala Leu Gly Glu Glu Ala  
1 5

(2) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 36 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:  
(A) NAME/KEY: exon  
(B) LOCATION: 1..36

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

CGGAAATTCC CTGAACAGTA CAGAGAGATC ATTCCA

36

(2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Pro Glu Gln Tyr Arg Glu Ile Ile Pro  
1 5

(2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 562 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: exon
- (B) LOCATION: 1..562

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

TGGAGAARTA CGAAGATATT CCTGAACAGT ACAGAGAGAT CATTCCACAA AACGTGGCCG	60
AGCATTAAA ATCGATAACT GAGGAAGAGA AAAAAGTGCT CAAAGAATTG GTTAAAGACT	120
ATGCAAATA CAAAGATGAA AATGAGTTCA TGGACGCATT AAAGCAAAA TCTGAAAGCC	180
TTTATGAGAA AGCTAAAAAA CTTCAAGATT TGCTGAAATC AAAAGTAGAC GCACCTGGAG	240
AAGAGGCAAA ACAATTGTG ATGAAGCTTA TCGCTGAGGC TCGTAAATTC CACGCAGAGC	300
TACTGGCCGG CATCAAACCA TCGCTAGAAG AACTAAAAGC CGTCGCTAAA AAGCATATTG	360
AAGAGTTGAA GAAGTTATCA GATGCAGCTA AAGATGATT CAAAAGCAA TTCCCTATCC	420
TCACATCCGT GTTCAGCAAT GAAAAAGCAA AGAAAATGAT GGACAACATT GTGAAAATT	480
AAAGTTGTAT GATTGCAGG ATATGAAATA AATGTTAAAT TGAAAAAAA AAAAAAAA	540
AAAAAAAAAA AAAAAAAAAG	562

(2) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 159 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS:  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Glu Lys Tyr Glu Asp Ile Pro Glu Gln Tyr Arg Glu Ile Ile Pro Gln  
1 5 10 15

Asn Val Ala Glu His Leu Lys Ser Ile Thr Glu Glu Glu Lys Lys Val  
20 25 30

Leu Lys Glu Phe Val Lys Asp Tyr Ala Lys Tyr Lys Asp Glu Asn Glu  
35 40 45

Phe Met Asp Ala Leu Lys Gln Lys Ser Glu Ser Leu Tyr Glu Lys Ala  
50 55 60

Lys Lys Leu Gln Asp Leu Leu Lys Ser Lys Val Asp Ala Leu Gly Glu  
65 70 75 80

Glu Ala Lys Gln Phe Val Met Lys Leu Ile Ala Glu Ala Arg Lys Phe  
85 90 95

His Ala Glu Leu Leu Ala Gly Ile Lys Pro Ser Leu Glu Glu Leu Lys  
100 105 110

Ala Val Ala Lys Lys His Ile Glu Glu Phe Glu Lys Leu Ser Asp Ala  
115 120 125

Ala Lys Asp Asp Phe Lys Lys Gln Phe Pro Ile Leu Thr Ser Val Phe  
130 135 140

Ser Asn Glu Lys Ala Lys Lys Met Met Asp Asn Phe Val Lys Asn  
145 150 155